

REMARKS

Claims 1-17 are pending in this application. Claim 3 is amended. Claims 12-17 are added. No new matter is presented. Applicants respectfully request the favorable consideration of claims 1-17 in view of the above amendments and the following remarks in response to Final Office Action dated July 10, 2003.

Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vos (U.S. Patent No. 5,363,413). The Office Action takes the position that Vos teaches or suggests all the features recited in claims 1-11. Applicants respectfully disagree.

Claim 1 is directed to a decoding method decoding multiplexed data using Viterbi decoding method, wherein the multiplexed data are composed by time division multiplexing a plurality of data streams. The multiplexed data are coded with at least a convolution code, and a coding rate and a modulation scheme are set individually for each of the data streams. The decoding method comprises the steps of measuring a strength of a noise in the multiplexed data, checking whether the strength of the noise measure is equal to or greater than a predetermined value, and initializing a path metric calculated based on the Viterbi decoding method, at a moment when decoding of one of the data streams is started, if the strength of the noise measure is equal to or greater than the predetermined value.

Claim 3 recites a data receiving system comprising a viterbi decoder, a signal-to-noise ratio monitor, a comparison unit, and an initiation signal generation unit. The Viterbi decoder decodes multiplexed data composed by time division multiplexing a plurality of data streams. The multiplexed data is coded with at least a convolution code, a coding rate and a modulation scheme that is set individually for each of the data streams. The signal-to-noise ratio monitor measures a strength of a noise included in the multiplexed data. The comparison unit checks whether the strength of the noise measured is equal to or greater than a predetermined value and outputs a notification signal if the strength of the noise measured is equal to or greater than the predetermined value. An initialization signal generation unit which outputs an initialization signal for initializing a path metric calculated by the Viterbi decoder, at a

moment when decoding on one of the data streams is started, when the initialization signal generation unit receives the notification signal.

Claim 9 is directed to a decoder comprising a Viterbi decoder which decodes multiplexed data composed by time division multiplexing a plurality of data streams. The data coded with at least a convolution code, a coding rate and a modulation system are set individually for each of the data streams. A signal to noise ratio monitor measures a strength of a noise included in the multiplexed data. A comparison unit which checks whether the strength of the noise measured is equal to or greater than a predetermined value. An initialization signal generation unit which outputs an initialization signal for initializing, at a moment when decoding of one of the data streams is started. A path metric calculated by the Viterbi decoder, when the initialization signal generation unit receives the notification signal.

Claim 10 is directed to a data transmitting and receiving system. A transmitting unit transmits a time division multiplexed data including a plurality of data streams. A receiving unit receives and decodes the time division multiplexed data. A receiving unit includes a Viterbi decoder which decodes the multiplexed data. A signal-to-noise ratio monitor detects a noise in the time division multiplexed data. An initialization signal generating unit outputs an initialization signal to the Viterbi decoder on the basis of the noise detected so as to initialize at a moment when decoding of one of the data streams is started, a path metric calculated by the Viterbi decoder.

The claimed invention recites the feature of initializing a path metric calculated based on the Viterbi decoding method, at a moment when decoding of one of the data streams is started, if the strength of the noise measured is equal to or greater than the predetermined value, which is neither taught nor suggested by the applied reference. Thus, the claimed invention provides the benefit of utilizing the calculated result of the path metric calculated by decoding the data stream having a coding rate of high error correction ability be utilized when the next data stream having coding rate of low error correction ability is decoded. As a result, the claimed invention provides the benefit of optimizing the decode of a plurality of data streams, which are multiplexed with high stability and reliability.

Vos discloses a data decoder using a dynamically indexed channel state metric. Specifically, Vos discloses a weighing the decoder decision based on the channel metric selected, when the decoder receives a second data stream having a coding rate of high correction ability after a first data stream having a coding rate of a low correction ability. The decoding of the second data stream is affected by the first data stream for a certain period of time. As a result, the decoding accuracy for the second data stream is decreased.

In other words, according to Vos, the decision circuit 27 of the decoder 15 carries out weighting, based on the index value generated by the indexing function 35, during the symbol time period in which the symbol impacts the signal. In contrast, in the present invention, the path metric is initialized at a moment when decoding of one of the data streams is started, or when a synchronous signal is detected. Therefore, even if a path metric degraded by the previous data stream having a bad quality, the degraded data stream is initialized such that the next data stream is decoded with the initialized path metric and is not affected by the degraded path metric. Therefore, Vos fails to teach or suggest initializing a path metric calculated based on the Viterbi decoding method, at a moment when decoding of one of the data streams is started, if the strength of the noise measure is equal to or greater than the predetermined value. Applicants request the withdrawal of the rejection of claims 1, 3, 9, and 10 under 35 U.S.C. 103.

Claims 2, 4-8, and 11 are dependent upon claims 1, 3, 9, and 10. It is respectfully submitted that these claims recite subject matter that is neither taught nor suggested by the applied reference for at least the reasons mentioned above. Therefore, Applicants request the withdrawal of the rejection of claims 2, 4-8, and 11 under 35 U.S.C. 103(a).

Claims 12-17 are added. No new matter is added. It is respectfully submitted that new claims 12-17 recite patentable subject matter. New claim 12 is directed to a decoding method of decoding multiplexed data using the Viterbi decoding method. The multiplexed data are composed by division multiplexing a plurality of data streams. The multiplexed data are coded with at least a convolution code. The decoding method

comprises the steps of measuring a strength of a noise in the multiplexed data, checking whether the strength of the noise measured is equal to or greater than a predetermined value and initializing a path metric calculated based on the Viterbi decoding method at a moment when a synchronous signal is detected from the multiplexed data if the strength of the noise measured is equal to or greater than the predetermined value.

New claim 13 recites a data receiving system comprising a viterbi decoder, a signal-to-noise ratio monitor, a comparison unit, and an initiation signal generation unit. The Viterbi decoder decodes multiplexed data composed by time division multiplexing a plurality of data streams. The multiplexed data is coded with at least a convolution code, a coding rate and a modulation scheme that is set individually for each of the data streams. The signal to noise ratio monitor measures a strength of a noise included in the multiplexed data. The comparison unit checks whether the strength of the noise measure is equal to or greater than a predetermined value and outputs a notification signal if the strength of the noise measured is equal to or greater than the predetermined value. An initialization signal generation unit which outputs an initialization signal for initializing a path metric calculated by the Viterbi decoder, at a moment when a synchronous signal is detected from the multiplexed data, when the initialization signal generation unit receives the notification signal.

Claim 15 is directed to a decoder having Viterbi decoder, which decodes multiplexed data composed by division multiplexing a plurality of data streams. The multiplexed data coded with at least a convolution code, a coding rate and a modulation scheme are set individually for each of the data streams. A signal-to-noise ratio monitor which measures a strength of a noise is included in the multiplexed data. A comparison unit which checks whether the strength of the noise measured is equal to or greater than a predetermined value and outputs a notification signal if the strength of the noise measured is equal to or greater than the predetermined value. An initialization signal generation unit which outputs an initialization signal for initializing a path metric is calculated by the Viterbi decoder at a moment when a synchronous signal is detected

from the multiplexed data, when the initialization signal generation unit receives the notification signal.

Claim 17 recites a data transmitting and receiving system. A transmitting unit transmits multiplexed data composed by time division multiplexing a plurality of data streams. The multiplexed data coded with at least a convolution code. A coding rate and a modulation scheme is set individually for each of the data streams. A receiving unit receives and decodes the time division multiplexed data. A receiving unit includes a Viterbi decoder, which decodes the multiplexed data. A signal-to-noise ratio monitor measures a strength of a noise included in the multiplexed data. A comparison unit which checks whether the strength of the noise measure is equal to or greater than a predetermined value and outputs a notification signal if the strength of the noise measured is equal to or greater than the predetermined value. An initialization signal generation unit which outputs an initialization signal for initializing a path metric calculated by the Viterbi decode at a moment when a synchronous signal is detected from the multiplexed data, when the initialization signal generation unit receives the notification signal.

In view of the above amendments and remarks, Applicants respectfully submit that Vos neither teaches nor suggests all the features of the claimed invention. Claims 3 is amended. Claims 12-17 are added. No new matter is presented. Accordingly, Applicants request the favorable consideration of claims 1-17.

Should the Examiner believe the application is not in condition for allowance, the Examiner is invited to contact Applicants' undersigned attorney at the telephone number listed below.

In the event this paper is not considered to be timely filed, Applicants respectfully petition for an appropriate extension of time. The Commissioner is authorized to charge payment for any additional fees which may be required with respect to this paper to Counsel's Deposit Account 01-2300.

Respectfully submitted,



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